

# SINGLE-FAMILY RESIDENTIAL CREDIT MANUAL



Department of  
**WATER  
RESOURCES**

Department of Water Resources  
525 Taylor Street  
Lynchburg, VA 24501

434.455.4250

[www.lynchburgva.gov/stormwater](http://www.lynchburgva.gov/stormwater)

## WHY IS STORMWATER IMPORTANT

**S**tormwater runoff is the water that flows off roofs, driveways, parking lots, streets and other hard surfaces during rain storms. Stormwater runoff is also the water that flows off grass surfaces and wooded areas that is not absorbed into the soil. Runoff that is not absorbed into the ground flows into ditches, culverts, catch basins and storm sewers and typically does not receive any treatment to remove pollutants before entering our local creeks and streams.

Water from rain or melting snow either seeps into the ground or flows across the ground, ultimately making its way into streams, creeks, and other water bodies. On its way, this runoff can pick up many natural and man-made substances that can pollute local water bodies. Examples of common pollutants include fertilizer, pesticide, pet waste, sediment, oil, salt, trace metals, grass clippings, leaves, and litter. Polluted runoff can be generated anywhere people use or alter the land, such as farms, yards, roofs, driveways, parking lots, construction sites, and roadways.

### BENEFITS OF A STORMWATER UTILITY

A stormwater utility is based on the premise that the urban drainage system is a public drainage system, similar to water or wastewater systems. When a demand is placed on these systems, the user pays. Stormwater runoff needs to be managed just as any other process in the City is managed, such as the water, sewer, roadway, or solid waste systems.

Management is essential to protect the quality of our natural watercourses as drinking water supplies and for recreational activities such as swimming, fishing and boating. Stormwater also needs to be managed to ensure that during storm events that stormwater runoff does not flood or erode private property or otherwise put public safety or private property at risk.

A typical city block generates more than 5 times the runoff of a woodland area of the same size



## WHAT IS THE COST TO THE CUSTOMER

Parking lots, rooftops and driveways can't absorb water, so it moves quickly over these surfaces into nearby storm sewers and streams. A greater flow of water –i.e. a greater demand—is placed on the urban drainage system. So, the more paved – or “impervious”—surfaces there are on your property, the greater the demand on the system.

For single-family residential properties, the fee is based on square footage of impervious surface. These properties are placed in three categories based on total impervious area.



Tier	Impervious Area	Fee
Small	1,300 sq. ft. or less	\$2
Medium	1,301 to 4,300 sq. ft.	\$4
Large	4,301 sq. ft. or more	\$6.40

### HOW CAN I EARN A CREDIT?

Residents that implement stormwater best management practices (BMPs) to reduce the stormwater rate or volume flowing from their properties to the storm system or surrounding bodies of water, can qualify to receive a reduction in their stormwater fee.

If approved, each device will earn the property owner a credit of 20% of the stormwater utility fee, up to a maximum credit of 50% of the fee. No property owner shall receive a credit of greater than 50% of the fee.

The City shall affirm or deny credit applications and reapplications within 45 days of submittal. Any credit denial shall include comments from the City indicating what modification the applicant can make in order to achieve acceptance of the credit or shall include a statement that the credit application as submitted must be restructured significantly to achieve approval. Property owner can submit a BMP design for approval prior to construction. Credit will not be applied until the BMP has been constructed and the construction has been approved.

- ◆ The **maximum** credit a homeowner can receive is **50%**.
- ◆ Credits are valid for **three years**
- ◆ Proper installation and maintenance is required to continue receiving the credit.



## APPROVED BMPs

### Rain Garden

A rain garden is a landscaped area in a depression designed to capture and filter stormwater runoff from an impervious surface.



#### Design Requirements

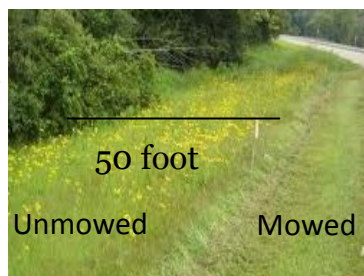
At least 50% of a property's impervious surface area must drain to the rain garden. The rain garden must be designed according to either:

- Virginia Department of Conservation and Recreation - Stormwater Design Specification No. 9 – Bioretention
- Virginia Department of Conservation and Recreation - Minimum Standard 3.11 – Bioretention Basin Practices

If 90% of a property's impervious surface area drains to a rain garden, double credit may be given up to the maximum amount. Include mosquito prevention and overflow controls.

### Vegetated Filter Strip

Vegetated filter strips are runoff flow paths of dense turf, meadow grasses, trees or other vegetation with a minimum slope to treat runoff from roof downspouts.



#### Design Requirements

- At least 50% of the property's roof area drains to vegetated filter strips.
- Downspout discharge must be dispersed using splash block.
- Filter strips are fully vegetated with no bare soil or mulch.
- Minimum flow length of 50 feet with slope of 5% or less.

### Rain Barrel/Cistern

Temporary storage of stormwater runoff can reduce peak runoff volumes and can result in reduced overall stormwater volumes by discharging

runoff over less saturated soil, thereby allowing greater infiltration and evaporation of runoff to occur. Other comparable configurations may be approved with appropriate detention time, volume, and release rate calculations.



In order to be effective, empty storage space must be available when rain falls. Therefore, the rain barrel or other storage device must empty itself within 4 to 48 hours of the end of rainfall. If the property owner wishes to save rainfall for use in gardening or other non-potable uses, additional storage for such uses may be installed. However, stormwater utility credit is granted only for storage that empties itself.

#### Design Requirements

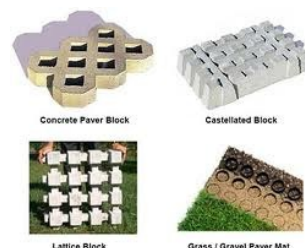
- At least 50% of a property's roof area must drain to a rain barrel or other self-emptying storage device.
- At least one gallon of storage must be provided for every three square foot of roof area. (stores one half inch of rain)
- Must drain in no less than 24 hours and no more than 4 days after each rainfall event.
- Overflows from storage must be directed to appropriate outlets or areas and away from neighboring properties, sidewalks, steep slopes or retaining walls.

### Pervious Pavement

Pervious pavements are designed to allow infiltration of stormwater through the surface into the soil below where water is naturally filtered and pollutants are removed. Pervious pavements may include paving blocks, grid pavers, pervious concrete, or pervious asphalt. Gravel is not considered pervious and is not eligible for a credit.

#### Design Requirements

- At least 1000 square feet of pervious pavement must be installed.
- Stone reservoir must be at least 10 inches deep at all points.



## How do I apply?

All applicants must complete a Single-Family General Application and include a picture of the Best Management Practice. Applications must be submitted with all required documentation, including photos, to the address below.

Once the Department of Water Resources has received your application, an administrative completeness review will be conducted. If the application is not complete, the Department will contact the applicant and may request additional information necessary to complete the application.

Once a complete application has been received the Department will review all documentation and the applicant will be notified in writing when an application is approved or denied. If an application is denied, the applicant can file appeal to the Department of Water Resources.

The appeals form, credit application and manual can be found at the website below:  
<http://www.lynchburgva.gov/stormwater>

### Application checklist:

- 1) Install your selected Best Management Practice.
- 2) Complete the Single-Family General Application.
- 3) Include pictures of each Best Management Practice installed.
- 4) Review your application.
- 5) Submit application to the address below.

City of Lynchburg  
 Department of Water Resources  
 Attn: Stormwater  
 525 Taylor Street  
 Lynchburg VA 24501

# RAIN GARDEN — DESIGN REQUIREMENTS

**RAIN GARDENS** are landscaped areas built in a depression that are designed to capture and filter stormwater runoff from a roof or other impervious surface. The plants and soil in a rain garden provide an easy, natural way of reducing the amount of stormwater runoff.

**20%  
Credit**

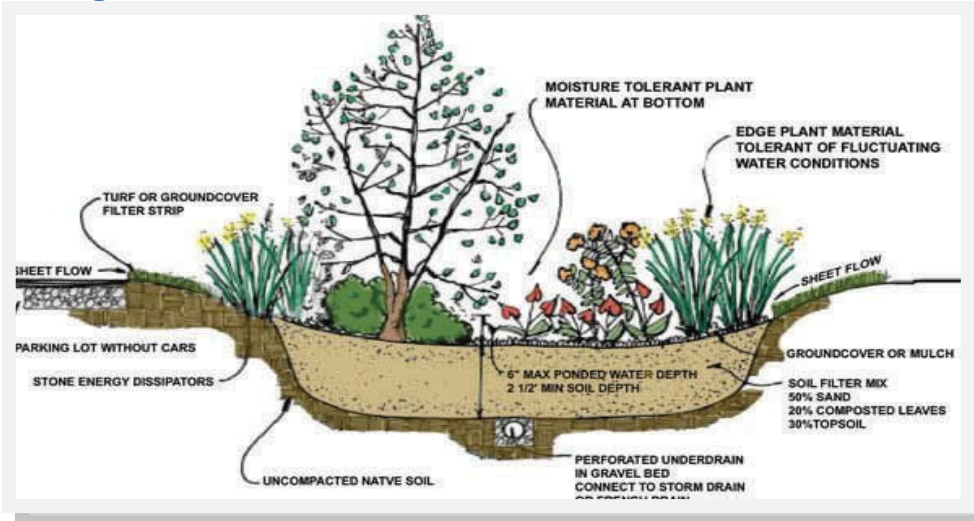


## Installation standards

To obtain a single family residential property credit for a rain garden the following standards and requirements must be met:

- At least 25 % of the property's roof area or equivalent impervious surface must drain to the rain garden.
- The rain garden must be sized and constructed according to the Virginia Department of Forestry Rain Gardens Technical Guide. Any alternate design must be pre-approved.
- Overflows must be directed to appropriate outlets or areas and away from neighboring properties, sidewalks, steep slopes or retaining walls.

## Rain garden cross section



## Maintenance guidelines

1. Rain gardens must be maintained annually to ensure continued function. Maintenance includes weeding, checking for erosion and other tasks listed in the Rain Garden Technical Guide.
2. The property owner is responsible for maintaining the rain garden. The credit renewal process will require documentation that the rain garden continues to function as approved.



**Include a photo of  
the rain garden  
with your  
application!**

## ON SITE STORMWATER STORAGE

**ON-SITE STORMWATER STORAGE STRUCTURES** can include rain barrels, cisterns other devices as approved by the City of Lynchburg Stormwater Utility. These structures collect and capture rooftop rainwater that would otherwise drain directly to the stormwater system or streams. The collected rainwater can be used to water plants, trees or lawns during dry periods.

**20%  
Credit**

### RAIN BARREL

A rain barrel is composed of a 40-55 gallon barrel or drum with some type of diverter or connection from a downspout, a spigot or hose to drain the barrel and some type of overflow mechanism. Any openings to the air should be screened to keep debris and insects out.



An overflow mechanism must be provided so that when the rain barrel is full, excess water can flow back into the downspout and then to a storm drain or onto a landscaped area.

Saving water not only helps protect the environment, it saves money and energy because of the decreased demand for treated tap water. You can purchase a rain barrel or make your own. Ensure your rain barrel will meet the credit requirements on the next page.

You will need to  
create a plan for  
how you will use  
the water

### CISTERN

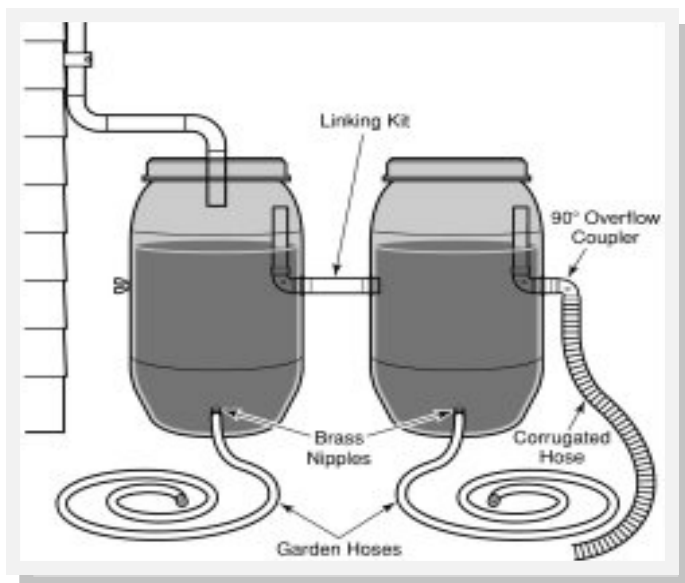
Cisterns are similar to rain barrels in function but hold larger quantities of water. They can be installed underground, at ground level, or elevated depending on the site and space constraints of the property.

A cistern should be constructed out of reinforced concrete, galvanized steel, or plastic, and should have smooth interior surfaces, be watertight, have enclosed lids and be sized according to the installation standards on the next page to manage the proper amount of runoff.



Certain design standards and  
guidelines must be met to obtain  
a SFR Credit.....

Keep reading to find out more on  
the next page



## ON SITE STORMWATER STORAGE, CONT...

### Installation Standards

To obtain a single family residential property credit for on-site stormwater storage the following standards and requirements must be met:

1. 50% of the property's roof area is properly connected to rain barrels or other approved storage devices that provide at least 40 gallons of storage per downspout
2. On-site stormwater storage must be completed in such a way that does not provide mosquito breeding grounds; such as making sure rain barrels are covered with a lid or screen that prevents mosquitoes from entering the storage structure.
3. On-site stormwater storage must be equipped with an overflow or bypass mechanism to divert rainwater to the storm drainage systems when storage structure is full. These mechanisms must not cause erosion, property damage or overflow onto a neighboring property.
4. On-site stormwater storage must be completely drained in no less than 24 hours and no longer than 4 days after each rainfall event.
5. All on-site stormwater storage structures must meet the local codes for downspout disconnection, property setbacks and all other applicable codes.

### Maintenance Guidelines

1. Clean your gutters regularly to reduce debris.
2. Clear off any screens as necessary.
3. Periodically check any hoses associated with the storage structure to clear any debris.
4. To winterize, disconnect and return the downspout to its original configuration. Remove the hoses and mesh screen and store them. Make sure to drain the container to prevent it from freezing and cracking. If possible, store it upside down, so no water or materials will be able to enter.
5. For cisterns, leave the outflow spigot fully open during frost/freezing periods and unhook the drain hose about twice a year to clean out any compacted sediment.



### Where to get a rain barrel:

You can purchase a rain barrel at most major lawn and garden centers. Call your local center to see if they carry them or if they can order one for you. There are numerous online suppliers as well.

You can also make your own rain barrel using a large trashcan, agricultural supply container, or other large container and a little ingenuity.

For further recommendations, talk to your local Soil & Water Conservation District or watershed group (see back page for contact information).



**Include a photo of the rain garden with your application!**

# PERVIOUS PAVEMENT

**PERVIOUS PAVEMENTS** are designed to allow percolation or infiltration of storm-water through the surface into the soil below where the water is naturally filtered and pollutants are removed. Pervious pavement may include paving blocks, grid pavers, pervious concrete, or pervious asphalt. Gravel driveways are not considered pervious and are not eligible for a credit.

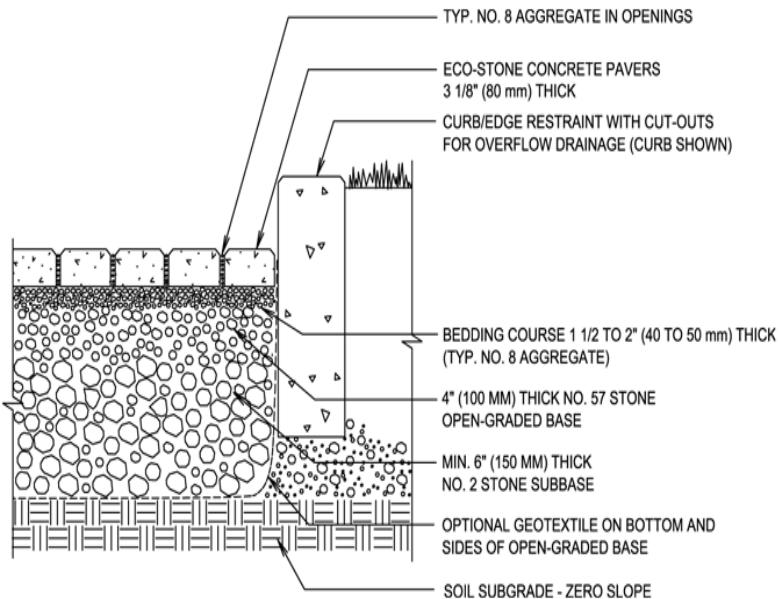
**20%  
Credit**

It is recommended that a qualified installer with knowledge of hydrology and hydraulics be consulted for applications using pervious pavement to ensure desired results. This fact sheet provides an overview of construction guidelines and research to date and is not meant to replace the services of experienced, professional installers.

## Installation standards:

To obtain a credit for pervious pavement the following criteria must be met:

- Installed for the purpose of runoff filtration.
- Area of pervious pavement is at least 1000 sq. ft.
- Stone reservoir underneath the pavement type is at least 10 inches deep at all points.
- Installation meets all local building and zoning standards for driveway installations.



## Maintenance Guidelines

1. Ensure pervious pavement system is draining and there are no visible signs of standing water on the surface.
2. Do not apply salt or sand during winter months.
3. Use a professional vacuum service annually to remove sediment accumulation and organic debris on the pavement surface.
4. Remove accumulated leaves and debris from pavement surface in the fall.

**Remember to include a photo of the pervious pavement and a photo of the construction identifying the depth of stone reservoir with your application!**



# VEGETATIVE FILTER STRIPS

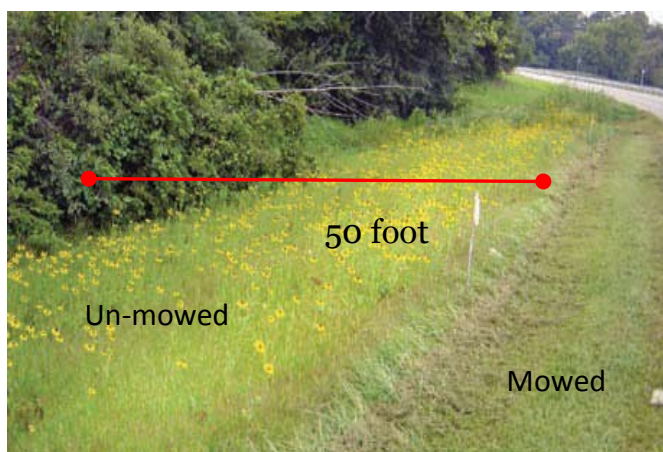
**VEGETATED FILTER STRIPS** are uniform strips of dense turf, meadow grasses, trees, or other vegetation with a minimum slope to treat runoff from roof downspouts.

**20%  
Credit**

## Installation standards:

To obtain a credit for vegetated filter strips the following criteria must be met:

- 50% of the property's roof area drains to the vegetated filter strip.
- Filter strips are fully vegetated and there are no areas of bare soil or mulch.
- Filter strips must be at least 50 feet long with slopes less than 5%.
- Runoff from roof downspouts must be dispersed using splash block.



## Maintenance guidelines:

1. Clean gutters regularly to reduce debris.
2. Check the splash blocks twice a year to make sure they are not broken or damaged.
3. Maintain healthy vegetation along the filter strip.
4. Plant additional vegetation if bare soil or erosion is present.

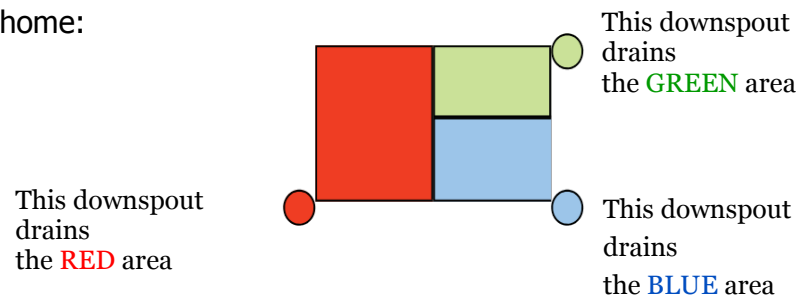


**Include a photo of the vegetated filter strip with your application!**

## EXAMPLE

The Smith's want to apply for a stormwater credit. Follow along as they decide which stormwater Best Management Practices (BMPs) will work for their property and fill out their application.

Let's look at their home:



For the Smith's to qualify for the credit either the red downspout or both the green and blue downspouts need to be connected to rain barrels. They decide to put a rain barrel on the red drain and goes to their neighborhood garden center and purchases a rain barrel kit. They attach the rain barrel to the red downspout and are now eligible for a **20% credit!**

But they are not finished! They like saving water and decide to add two more barrels and capture all the rain from their roof. They install two more rain barrels and applies for another credit. Their credit is **up to 40%!**

Lets review the Smith's situation. They have installed three rain barrels and have **qualified for 40% off their stormwater bill**. They can **earn up to 50% off** so they still have 10% more to save. What else can they do to get that last 10% credit? Their driveway and patio square footage equals 675 square feet so they don't meet the 1000 square foot installation requirement for pervious pavement.

The Smith's review their Credit Manual and discover another way to save. They like gardening, so they choose a rain garden for their next BMP. They download the *Rain Garden Technical Guide* on the Department of Forestry's website. They have already captured all of the rain from their roof, so they search for drainage from another impervious surface area where water can be captured. With a little reworking of the landscaping, they can capture the runoff from the small driveway into an appropriately sized rain garden. They fill out a third credit application for the **remaining 10% credit**.

With a little bit of research, sweat equity and planning, the Smith's have accomplished great things! They have saved water, reduced pollution and added a beautiful new garden.

Oh—and they **saved 50%** on their stormwater bill. Good job Smith family!!!

## RESOURCES

### Department of Forestry

Information on Water Quality and rain gardens  
Rain garden Technical Guide  
<http://www.dof.virginia.gov>  
434-977-6555

### Virginia Soil & Water Conservation District

Watershed education, low impact development information, backyard conservation, lawn and tree care tips, rain garden and rain barrel information  
<http://www.vaswcd.org>  
804-559-0324

### Virginia Department of Conservation and Recreation

Watershed education, lawn care and pet waste information, land conservation  
<http://www.dcr.virginia.gov>  
804-786-1712

### James River Association

9 South 12th Street, 4th Floor  
Richmond, VA 23219  
[www.jamesriverassociation.org](http://www.jamesriverassociation.org)  
(804) 788-8811

### Clean Virginia Waterways

Rain barrel workshops and supplies, watershed education  
<http://www.longwood.edu/cleanva>  
434-395-2602

### Chesapeake Bay Foundation

Water Quality, Lawn care tips, Bay education, rain garden & rain barrel information  
<http://www.cbf.org>  
804-648-4011

### Alliance for the Chesapeake Bay

Bay education, Clean Stream projects, rain barrel and native landscaping information  
<http://www.allianceforthebay.org>  
804-775-0951

### Environmental Protection Agency (EPA)

Pollution Prevention  
<http://www.epa.gov/stormwater>  
800-438-2474



Stormwater BMPs help  
manage the quantity and  
quality of stormwater runoff